

III. Please amend the claims as set forth below:

(Original) 1. An AC-to-DC converter comprising:

- 5 a transformer having a primary side for inputting an input signal and a secondary side for outputting an output signal;
- a synchronous rectifier controller connected only to circuits on said secondary side for controlling a synchronous
- 10 rectifier (SR) switch on said secondary side for generating said output signal;
- said SR switch comprising a MOSFET transistor having a gate connected to said synchronous rectifier controller;
- 15 said synchronous rectifier controller further comprising a plurality of circuit elements for turning off said SR switch before a main switch of said transformer is turned on and for turning on said SR switch when said main switch of said
- 20 transformer is turned off;
- said synchronous rectifier controller comprising a means for generating a dead-time for turning off said SR switch with a controlled dead-time before said main switch of said
- 25 transformer is turned on;
- said synchronous rectifier controller comprising a pulse differentiator for resetting and restarting a ramp generator at a time when a main switch driving said transformer on;
- 30 said dead-time means further comprising a voltage-ramping means initiated by an output from said pulse differentiator for generating an up-ramping voltage;

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5 said dead-time means further comprising a dead-time
comparator for comparing said up-ramping voltage with a
voltage generated by a charge integrator for generating a
dead-time signal for turning off an output current driver.

 said charge integrator comprising a circuit having a fixed
time-constant of charge-integration independent of an
output load of said AC-to-DC converter;

10 said synchronous rectifier controller further comprising an
output current detector for enabling a positive current
source for providing a fixed positive current to charge said
charge integrator; and

15 said synchronous rectifier controller further comprising a
switch for turning on and off said positive current source
depending on an output of a secondary winding of said
transformer.

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(Previously Presented) 2. An AC-to-DC converter comprising:

5 a transformer having a primary side for inputting an input signal and a secondary side for outputting an output DC signal; ~~and~~

10 a synchronous rectifier controller connected only to circuits on said secondary side for controlling a synchronous rectifier (SR) switch on said secondary side for generating said DC output signal; and

15 said synchronous rectifier controller further comprising a plurality of circuit elements for turning off said SR switch before a main switch driving said transformer on and for turning on said SR switch when said main switch of said transformer is turned off wherein said synchronous rectifier controller further comprising a means for generating a
20 dead-time for turning off said SR switch with a controlled dead-time before said main switch of said transformer is turned on.

(Original) 3. The AC-to-DC converter of claim 2 wherein:

25 said SR switch comprising a MOSFET transistor having a gate connected to said synchronous rectifier controller.

(Currently Amended) 4. The AC-to-DC converter of claim 2 wherein:

5 said synchronous rectifier controller further comprising a
 pulse width modulation means for generating a pulse width
 duty cycle based on a feedback signal of said ~~AS~~AC-to-DC
 converter.

(Currently Amended) 5. The AC-to-DC converter of claim 4 wherein:

10 said pulse width modulation means connected to and
 controlling said SR switch.

(Currently Amended) 6. The AC-to-DC converter of claim 2 wherein:

15 said synchronous rectifier controller comprising a pulse
 differentiator for resetting and restarting the voltage ramp
 generator at a time when a main switch driving said
 transformer on.

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(Currently Amended) 7. The AC-to-DC converter of claim 2 wherein:

5 said dead-time means further comprising a voltage-ramping
 means initiated by an output from said pulse differentiator
 for generating an up-ramping voltage; and

 said dead-time means further comprising a dead-time
 comparator for comparing said up-ramping voltage with a
 voltage generated by a charge integrator for generating a
10 dead-time signal for turning off an output current driver.

(Currently Amended) 8. The AC-to-DC converter of claim 7 wherein:

15 said charge integrator comprising a circuit having a fixed
 time-constant of charge-integration independent of an
 output load of said AC-to-DC converter.

(Currently Amended) 9. The AC-to-DC converter of claim 7 wherein:

20 said synchronous rectifier controller further comprising a
 positive current detector for enabling a positive current
 source for providing a constant positive current to charge
 said charge integrator; and

25 said synchronous rectifier controller further comprising a
 positive current switch for turning on and off said positive
 current source depending on an output of a secondary
 winding of said transformer.

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(Original) 10. The AC-to-DC converter of claim 3 wherein:

5 said SR switch comprising a N-channel MOSFET transistor
 having a gate connected to said synchronous rectifier
 controller for turning off said MOSFET when a drain of said
 N-channel MOSFET transistor is driven high.

(Currently Amended) 11. The AC-to-DC converter of claim 2 wherein:

10 said synchronous rectifier controller comprising a voltage
 clamp waveform clipper connected to an output of a
 secondary winding of said transformer for providing a
 square waveform corresponding to said output of said
15 secondary winding.

(Currently Amended)) 12. The AC-to-DC converter of claim 2
wherein:

20 said synchronous rectifier controller further comprising a
 current threshold detector connected to an output of a
 secondary winding of said transformer for sensing and
 turning off said SR switch when a current said output of said
 secondary winding is reduced below a threshold current.

25 (Cancelled) 13. A synchronous rectifier controller for an AC-to-DC
converter wherein:

30 said synchronous rectifier controller connected only to
 circuits on a secondary winding of a transformer of said
 AC-to-DC converter and responding to a voltage of
 secondary winding for controlling a synchronous rectifier
 (SR) switch on said secondary side for generating a DC
 output signal.

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(Cancelled) 14. The synchronous rectifier controller of claim 13
wherein:

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said SR switch comprising a MOSFET transistor having a
gate connected to said synchronous rectifier controller.

(Cancelled) 15. The synchronous rectifier controller of claim 14
wherein:

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said SR switch comprising a N-channel MOSFET transistor
having a gate connected to said synchronous rectifier
controller for turning off said MOSFET when a drain of said
N-channel MOSFET transistor is driven high.

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